

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as deemed necessary to place the application into condition for allowance.

Specifically, by this Amendment claim 2 has been amended to include limitations previously set forth in claim 4. Claim 4 has thus been canceled. No new claims have been added to the application. Accordingly, claims 2 and 5-14 are presently pending in the application. No new matter has been added to the application.

In the prior Office Action, the Examiner rejected claims 2 and 4-14 under 35 U.S.C. §103(a) as being unpatentable over Coon et al., U.S. Pat. 7,169,344 B2, either alone or further in view of Wycech, U.S. Pat. 6,406,078. For the reasons set forth below, applicant respectfully requests reconsideration of the claim rejections.

The Examiner contends that while Coon et al. does not explicitly disclose placing a bag or a vessel that has been pre-packed with multiple discrete microcapsules that include a core substance consisting of a liquid or a solid wrapped with a thermoplastic resin film inside a skeleton member and/or a space bounded by the skeleton member and a panel member peripheral thereto as claimed in claim 2, the teachings set forth at col. 10, lines 31-37 of Coon et al. would motivate one having skill in the art to do just that.

At col. 10, lines 31-37, Coon et al. states that:

In another embodiment, the material 14 is provided in an encapsulated or partially encapsulated form, which may comprise a pellet, which includes an expandable foamable material, encapsulated or partially

encapsulated in an adhesive shell, which could then be attached or deposited within the chamber 12 in a desired configuration.

The Examiner characterizes this sentence as teaching that the reinforcing material 14 "would be an encapsulated pellet, which includes an expandable foamable material, encapsulated within an adhesive shell, which would then be deposited within the chamber 12." The Examiner then states that Coon et al. thus teaches "a core/shell arrangement for the foamable material wherein the only missing aspects are multiple discrete microcapsules and that the shell is specifically thermoplastic." The Examiner then reasons that since Figs. 2 and 3 of Coon et al. depict the material 14 as discrete pellets, "it surely would have been obvious to employ the microcapsule embodiment of Coon [et al.] as multiple microcapsules."

Applicant respectfully submits that the Examiner reads far too much into the single sentence set forth at col. 10, lines 31-37 of Coon et al. There is no "microcapsule embodiment" of Coon et al. The sentence immediately following the sentence referenced by the Examiner sheds light on the meaning of the sentence referenced by the Examiner. In that sentence, which appears at col. 10, lines 37-40, Coon et al. states:

An example of one such system is disclosed in commonly owned, co-pending U.S. application Ser. No. 09/524,298 ("Expandable Pre-Formed Plug"), hereby incorporated by reference.

The referenced co-pending application later issued as Czaplicki et al., U.S. Pat. 6,422,575. Czaplicki et al. does not teach a "microcapsule embodiment" as suggested by the Examiner. On the contrary, Czaplicki et al. teaches an expandable preformed "plug" that can be used to seal and/or structurally reinforce a structure

having surfaces defining a space therebetween. The "plug" features an expandable inner core 12 and an adhesive outer skin 14. A col. 5, lines 19-21, Czaplicki et al. teaches that a "plug" within the scope of the invention could have a radius of 5 mm, with 1 mm of that radius being the thickness of the adhesive outer skin. Thus, such a plug would have a diameter of 1 cm. At col. 5, lines 34-36, Czaplicki et al. teaches that upon application of heat, the core 12 will expand to at least 1000% of the unexpanded volume, and that expansions of greater than 2500% are possible. Thus, the 1 cm plug, expanded by 1000%, would have a final diameter of at least 10 cm.

Nowhere does Czaplicki et al. teach microcapsules. And neither does Coon et al. Coon et al. only mentions a "pellet" in col. 10, line 33, which is a term that accurately describes the 1 cm diameter "plug" discussed in the then co-pending application (now Czaplicki et al.) specifically referenced in the following sentence. Thus, Coon et al. does not teach a "microcapsule embodiment" as suggested by the Examiner.

The Examiner references Wycech "to show the aspects of thermoplastic microcapsules and foams", which the Examiner characterizes as being "nothing but conventional in the art." Applicant respectfully submits that since Coon et al. and Czaplicki et al. do not mention or suggest a "microcapsule embodiment", the Examiner's reference and reliance upon Wycech is improper. Nevertheless, even if Coon et al. and/or Czaplicki et al. did disclose some type of "microcapsule embodiment", the Examiner's reliance upon Wycech is misplaced.

Wycech teaches that a resin-based material 18 can be applied on selected portions of an inner tube 16, which is then fitted within a cavity 24 of an outer shell

14. When this arrangement is heated, the resin-based material 18 bonds the inner tube 16 and outer shell 14 together, forming a reinforced structure. The Examiner references only the teachings set forth at col. 5, lines 15-30 of Wycech, which relate to a single component of the resin-based material 18, namely the "cell-forming agent" component. The Examiner contends in the prior Office Action that this portion of Wycech teaches that "foams are often supplied as discrete thermoplastic film microcapsules and the capsules are subsequently broken upon heating and expansion of the foam inside". Applicant respectfully submits that even if Wycech teaches that which is suggested by the Examiner, such teaching does not read on the invention as claimed in claim 2.

Wycech teaches that the resin-based layer 18 includes at least three components, namely: (1) a synthetic resin; (2) a cell-forming agent; and (3) a filler (see col. 5, lines 4-5). The cell-forming agent component and the filler component are dispersed and mixed in the synthetic resin component, which binds them together in layer form. Wycech teaches that the term "cell-forming agent" refers to "agents which produce bubbles, pores or cavities in layer 18." (see col. 5, lines 8-11). Wycech discloses a variety of materials that can be mixed with the synthetic resin and filler to produce "bubbles, pores or cavities" in layer 18. Glass microspheres are described as being most preferred (see col. 5, lines 28-29), but Wycech teaches that other materials including unexpanded thermoplastic microspheres can be used (see col. 5, lines 18-21). But in all cases, the microspheres are dispersed or mixed in the synthetic resin, which binds them together to form the layer 18. Wycech does not teach any microspheres that have a

core/shell structure, only microspheres that can be expanded within a synthetic resin to form a layer provided with bubbles or porers.

Wycech thus does not teach a bag or a vessel that has been pre-packed with multiple discrete microcapsules that include a core substance consisting of a liquid or a solid wrapped with a thermoplastic resin film as claimed in claim 2. The microspheres used as "cell-forming agents" in Wycech do not have a core/shell structure. Thus, even if one were to place the unexpanded thermoplastic microspheres mentioned in Wycech as "cell-forming agents" in a bag independent of the synthetic resin and filler material Wycech teaches they should be dispersed in, and then heat the bag within a skeleton structure member, such unexpanded thermoplastic microspheres would not gasify a core substance and soften a thermoplastic film wrapper because there is no thermoplastic film wrapper. And thus, heating such a material would not cause the microcapsules to expand and thus form hollow granules having an external diameter within the range of 10 μm to 200 μm that, upon cooling, would solidify and bond together as a solidified granular bulk material as claimed in claim 2.

The determination regarding whether an invention as claimed is obvious in view of the prior art must be made in accordance with the standards set forth in the Supreme Court's opinion in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 U.S.P.Q.2d 1385 (2007). In the *KSR* case, the Court made it clear that in order to reject a claim under 35 U.S.C. §103, there must be an explicit analysis explaining the apparent reason why a person of ordinary skill in the art would combine known elements described in the prior art in the way claimed. The person of ordinary skill in the art would have to see the benefit of making the combination. The person of

ordinary skill in the art would have to recognize that it would improve similar devices or methods in the same way. The critical inquiry is whether the claimed improvement is more than the predictable use of prior-art elements according to their established functions. If it is, then the improvement is not obvious under 35 U.S.C. §103(a). In the present case, the analysis required by *KSR* requires a finding that applicants' invention, as claimed, is not obvious in view of Coon et al., either alone or further in view of Wycech.

Neither Coon et al., the co-pending application incorporated by referenced in Coon et al. (i.e., Czaplicki et al.) nor Wycech fairly disclose placing a bag or a vessel that has been pre-packed with multiple discrete microcapsules that include a core substance consisting of a liquid or a solid wrapped with a thermoplastic resin film inside a skeleton member and/or a space bounded by the skeleton member and a panel member peripheral thereto, and heating the microcapsules to gasify the core substance and soften the thermoplastic film and thereby cause the microcapsules to expand and thus form hollow granules having an external diameter within the range of 10 μm to 200 μm that, upon cooling, solidify within the skeleton member and/or the space bounded by the skeleton member and the panel member peripheral thereto and bond together as a solidified granular bulk material as claimed in claim 2. At best, Coon et al. teaches placing a "pellet" or "plug" of expandable material into a structural member and then heating the "pellet" or "plug". But such a "pellet" or "plug" is not a microcapsule having the composition and function as claimed in the present application and it does not function in the same way as disclosed and claimed in the present application. And Wycech teaches a layer containing bubble-forming substances that do not have a core/shell structure, but rather which are

dispersed in a synthetic resin that serves as a binder for a layer that includes bubbles. The Examiner has not identified a reason why one of ordinary skill in the art would find it obvious to modify the prior art references to arrive at a method as claimed in claim 2, and has not shown why one of ordinary skill in the art would expect the same result to be obtained in the present application.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. SHM-16348.

Respectfully submitted,

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